REMARKS

Summary of Claims

The Office Action mailed October 20, 2004 has been reviewed and the comments of the Patent and Trademark Office have been considered. Claims 1-22 were pending in the application. Claims 1-13, and 16-20 have been amended and no claims have been canceled or newly added. Therefore, claims 1-22 are pending in the application and are submitted for reconsideration. It should be noted that several claims have been amended to recite the claimed invention without using means-plus-function terminology.

This amendment changes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, are presented, with an appropriate defined status identifier.

Applicant sincerely thanks the examiner for indicating that claims 16-19 are allowed and that claims 14, 15, and 20 contain allowable subject matter.

Amendments to the Specification

Applicant has amended the summary of the invention section to conform to the pending claims. No new matter has been added.

Rejection under 35 U.S.C. § 112

Claims 5, 8-10, and 20 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicant has amended claims 8-10 to address the issues noted in the office action with respect to these claims. With respect to the rejection of claims 5 and 20, applicant notes that use of "substantially" is widely used in patent practice to denote a value that is close to, for example, zero as recited in these claims. One skilled in the art would recognize the intended scope of this claimed term based on the specific guidance provided in the specification. See page 13, line to page 14, line 8 which provides a description of the intended scope of substantially zero in the context of the claimed invention in these claims. Accordingly, applicant submits that these claims are in definite form and meet the requirements of § 112, second paragraph.

Prior Art Rejection

In the Office Action, claims 1-13, 21, and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent 6,078,903 to Kealhof (hereafter "Kealhof") in view of U.S. application publication no. 2003/0088601 to Pitsianis et al. (hereafter "Pitsianis"). Applicant respectfully traverses this rejection for at least the following reasons.

Independent claims 1, 8, 9, 10, 12, 21, and 22 recite at least the following features that are not disclosed or suggested by the applied prior art: (1) a characteristic function calculating unit (or process) that calculates a characteristic function on the basis of each loan amount and corresponding bankruptcy probability; and (2) calculating a probability distribution by performing a fourier transform *inversion* of the characteristic function. Neither of these features is disclosed or suggested by the applied prior art.

As acknowledged in the Office Action, Kealhof does not discuss, suggest, or remotely imply any use of a fourier transform inversion in the context of either the claimed invention or the modeling of risk of loans in a financial portfolio disclosed by Kealhof. Kealhof discloses the use of Markowitz equations and other similar portfolio analysis equations and but is not concerned with replacing or using an improved equation or transformation. Rather Kealhof focuses on and discloses a technique for accurately *assigning input values* that may be processed with known portfolio analysis techniques. No discussion in Kealhof or any other cited prior art discloses or suggests the use of the claimed fourier transform inversion in the context of the claimed invention recited in the pending independent claims. Furthermore, the distribution function disclosed in Kealhof does not correspond to the claimed characteristic function which is calculated on a portfolio wide basis based on each loan amount and corresponding bankruptcy probability for all the loans in the portfolio being analyzed.

Specifically, in col. 4, lines 24-52, Kealhof discloses the probability of default, the expected default frequency (EDF) and the loss given default (LGD) are introduced for explaining the change of the value of a loan. However, neither the claimed characteristic function nor Fourier transform inversion is explained in this part.

In col. 6, lines 7-24, Kealhof discloses that a distribution function is chosen so that its expected value is equal to the expected value at the time horizon (which is a time period

before maturity of the loan). Likewise, in col. 7, lines 25-45 Kealhof the probability of default of the portfolio. However, *neither* (1) the claimed characteristic function nor (2) the calculation of a probability distribution of loan losses by a fourier transform inversion of the claimed characteristic function is disclosed or suggested by Kealhof.

Neither is this deficiency in Kealhof cured by Pitsianis. Therefore, the office action fails to make a *prima facie* case of obviousness with respect to the features recited in the pending independent claims.

Specifically, Pitsianis discloses that efficient computation of complex multiplication results and very efficient fast Fourier transforms (FFT) are provided using a disclosed architecture. However, nowhere does Pitsianis disclose either of features missing in the Kealhof. That is, Pitsianis also does not disclose or suggest either 1) the claimed characteristic function or (2) the calculation of a probability distribution by a fourier transform inversion of the claimed characteristic function.

Accordingly, neither Kealhof nor Pitsianis discloses or suggests the features recited in the pending independent claims. Therefore, their combination (even if proper) also does not disclose the features recited in the pending independent claims.

Furthermore, the combination of Pitsianis with Kealhof in the context of claimed invention is also improper. There is no suggestion or teaching that the FFT implementation disclosed by Pitsianis would result in an operable fourier transform inversion of the distribution function disclosed by Kealhof in order to derive a meaningful probability distribution of loan losses. Therefore, this combination proposed by the office action is improper since (1) it does not show how the combination would be operable; and (2) there is no teaching or suggestion in either reference or the prior art (other than the applicant's disclosure) to make the combination in the context of the claimed invention as proposed in the office action.

Accordingly, applicant respectfully submits that neither of the applied references discloses or suggests the features recited in the pending independent claims even if they were properly combinable which they are not.

Independent claim 6 is also believed to be patentable for the similar reasons to that discussed above even though it recites a slightly different characteristic function in

combination with the fourier transform inversion to calculate the probability distribution of loan losses.

The dependent claims are allowable for at least the same reasons as the respective independent claims on which they ultimately depend. In addition, they recite additional patentable features when considered as a whole.

Conclusion

In view of the foregoing amendments and remarks, applicant believes that the application is in condition for allowance and an indication of the same is respectfully requested. If there are any questions regarding the application, or if an examiner's amendment would facilitate the allowance of one or more of the claims, the examiner is invited to contact the undersigned attorney at the local telephone number below.

Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge deposit account No. 19-0741 for any such fees; and applicant hereby petitions for any needed extension of time.

Respectfully submitted,

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By Aaron C. Chatterjee

Pavan K. Agarwal
Registration No. 40,888

Aaron C. Chatterjee
Registration No. 41,398

Attorneys for Applicant

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 945-6162
Facsimile: (202) 672-5399